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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/147,750	05/28/1999	MIKAEL ISAKSSON	2867-0144-2P	2143

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EXAMINER	
DEPPE, BETSY LEE	
ART UNIT	**PAPER NUMBER**
2634	

DATE MAILED: 07/07/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/147,750	ISAKSSON ET AL.	
	Examiner	Art Unit	
	Betsy L. Deppe	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32 and 36-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,11-23,27-32 and 36-45* is/are rejected.

7)☒ Claim(s) *8-10 and 24-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed April 26, 2004 have been fully considered but they are not persuasive.

2. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3, 5-7, 11-15, 17, 19, 21-23, 27-31, 36, 38, 40, 41, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. (US Patent No. 5,470,447, cited in the Office Action mailed August 13, 2003, Paper No. 12) in view of

Tzannes et al. (US Patent No. 6,072,779, cited in the Office Action mailed August 13, 2003, Paper No. 12), Spruyt et al. (US Patent No. 6,370,156 B2 cited in the Office Action mailed January 26, 2004, Paper No. 14) and Verbueken (US Patent No. 5,867,528, cited in the Office Action mailed August 13, 2003, Paper No. 12).

5. With regard to claims 1, 6, 17, 22, 36, 38, 40, and 41, Chow et al. discloses a multi-carrier transmission system comprised of a first and second transceiver wherein the bit loading parameters are updated. (See abstract and column 12, lines 27-37) However, Chow et al. does not explicitly teach using a control channel for transmitting data to update bit loading parameters. However, Chow et al. does not teach changing the control channel to a different channel on the basis of channel characteristics.

Tzannes et al. discloses using a control channel to transmit data for updating bit loading parameters. (See abstract; Figure 1 and column4, line 51 – column 2, line 21) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a dedicated control channel in Chow et al. in order to easily monitor control data for making requisite changes.

Spruyt et al. teaches using a pilot carrier for transmitting control channel data (see column 5, lines 31-36) and Verbueken teaches changing a pilot carrier to a different frequency (i.e. a different channel) based on channel characteristics (e.g. signal-to-noise ratio). (See abstract; column 1, lines 46-54; column 2, lines 13-16; column 4, lines 6-29) It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of changing a pilot/control channel based on channel characteristics in the system disclosed by Chow et al. in view of

Tzannes et al. in order to increase the likelihood that control data is accurately received. As the quality of the control channel deteriorates, the control data becomes more corrupted/distorted or affected such that the receiver does not receive the correct information/data.

6. With regard to claims 3, 5, 19, 21, 38, 40, 43 and 45, the cited references disclose that the multi-carrier transmission system is a DMT-based ADSL transmission system. (See Chow et al. column 1, line 52-column 2, line 35 and column 6, lines 61-67)

7. With regard to claims 7 and 23, the cited references disclose establishing a control channel and transferring the control channel. Although the cited references do not explicitly disclose enabling bit loading control and enabling of all the carrier waves, it is inherent that bit loading control and all the carrier waves must be enabled in order for the system to function/operate.

8. With regard to claims 11, 13, 27 and 29, the cited references disclose the claimed invention including estimating channel characteristics using periodic transmission of a base sync frame wherein the base sync frames are transmitted at base sync intervals enabling the transceivers to identify a frame as sync frame.

Since Tzannes et al. discloses estimating channel characteristics using periodic transmission of a base sync frame wherein the base sync frames (i.e. the control frame in Figure 2) are transmitted at base sync intervals enabling the transceivers to identify a frame as sync frame (see column 10, line 61-column 11, line 33), it would have been obvious to one of ordinary skill in the art at the time the invention was made to

implement the channel characteristic estimation technique disclosed by Tzannes et al. into the system disclosed by the cited references in order to determine a new bit loading table relatively quickly and efficiently and to synchronize use of the new table by the two transceivers.

9. With regard to claims 12 and 28, the cited references disclose the claimed invention except for explicitly specifying that the channel characteristics include attenuation, phase shifting and variance. It is inherent that these channel characteristics affect the signal-to-noise ratio used for determining bit allocation.

10. With regard to claims 14 and 30, the cited references disclose the claimed invention except for transmitting additional sync frames at intervals between the base sync frames. It would have been an obvious matter of design choice to transmit additional sync frames since applicant has not disclosed that transmitting additional sync frames solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with without transmitting additional sync frames. Whether additional sync frames are transmitted depend on how frequently the system synchronization must be updated.

11. With regard to claims 15 and 31, the cited references disclose the claimed invention including issuing commands for system reconfiguration at the start of the BSI/control frame and effecting the reconfiguration at the start of the next BSI/control frame. (See Tzannes et al., column 2, line 63 - column 3, line 2)

12. Claims 2, 4, 18, 20, 37, 39, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. in view of Tzannes et al., Spruyt et al., and Verbueken as applied to claims 1, 17, 36 and 41, respectively above, and further in view of Chow (US Patent No. 6,064,692, cited in the Office Action mailed August 13, 2003, Paper No. 12).

13. With regard to claims 2, 18, 37 and 42, the cited references as applied to claims 1, 17, 36 and 41, respectively, disclose the claimed invention including the first transceiver initiating changes in bit loading and control channel selection and the second transceiver effecting the changes. However, the cited references do not disclose the second transceiver measuring changes in channel characteristics and forwards the related data over the control channel to the first transceiver.

Chow discloses a multi-carrier transmission system wherein the second transceiver measures changes in channel characteristics and forwards the related data over the control channel to the first transceiver. (See column 10, line 21-column 11, line 33) It would have been obvious to one of ordinary skill in the art at the time the invention was made implement the teaching of Chow into the apparatus disclosed by Chow et al. in view of Verbueken in order to efficiently determine bit allocation and with better centralized control.

14. With regard to claims 4, 20,39 and 44, the cited references as applied to claims 1, 17, 36 and 41, respectively, disclose the claimed invention including a DMT-based system. However, the cited references as applied to claims 1, 17, 36 and 41, respectively, do not teach a VDSL system. Since Chow discloses the uses of a DMT-

based system for Asymmetric Digital Subscriber Lines (ADSL) or Very High Speed Digital Subscriber Lines (VDSL), it would have been obvious matter of design to choice to apply the DMT-based system disclosed by the cited references as applied to claims 1, 17, 36 and 41, respectively, to Asymmetric Digital Subscriber Lines (ADSL) or Very High Speed Digital Subscriber Lines (VDSL) based on the desired system requirements.

Allowable Subject Matter

15. Claims 8-10 and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (703) 305-4960. The examiner can normally be reached on Monday, Tuesday and Thursday (8:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 305-4700.

Betsy L. Deppe
Primary Examiner
Art Unit 2634
June 30, 2004